WHAT IS CLAIMED IS:

1. A digital automatic fine tuning method, comprising the steps of:

5   setting a frequency detection resolution 'a' of an Intermediate Frequency (IF) signal and a nominal frequency f_0;

calculating a reference counted value X from the nominal frequency f_0 and the detection resolution 'a' according to the follow Equation, $X:f_0 = X+1:f_0+a$, and a window period 'b' which

10   is time required to count to the reference counted value X;

receiving an IF signal;

resetting a window counter for counting the window period and a frequency counter unit for counting a frequency to respective initial values;

15   counting frequency detection time using the window counter and a frequency of the received IF signal using the frequency counter unit;

determining whether a counted value of the window counter reaches the calculated window period 'b';

20   if it is determined that the counted value of the window counter reaches the window period 'b', detecting a counted value 'd' of the frequency counter unit; and

outputting an automatic fine tuning signal corresponding to a difference between the detected counted value 'd' and the

25   calculated reference counted value X and returning to the step

of resetting.

2. The digital automatic fine tuning method according to claim 1, further comprising the steps of:

before the step of receiving the IF signal, setting a preset value 'c' so that state values of predetermined bits become "0" at an end point of the window period at the time of the frequency counting of the IF signal having a frequency equal to the nominal frequency, on the basis of the calculated reference counted value X;

after the step of counting the frequency using the window counter and the frequency counter unit, determining whether a counted frequency value reaches the preset value 'c'; and

if it is determined that the counted frequency value reaches the preset value 'c', presetting the frequency counter unit to an initialization value,

wherein the step of outputting the automatic fine tuning signal is performed in such a way that counted frequency data detected at the end point of the window period are output as automatic fine tuning data.

3. The digital automatic fine tuning method according to claim 1, wherein only data of predetermined lower bits of the counted frequency data detected at the end point of the window period are used as the automatic fine tuning data.

4. A digital automatic fine tuning apparatus, comprising:

a frequency counter unit for receiving an IF signal and counting a frequency of the received IF signal;

a window generation unit for generating a window signal to set a frequency detection period of the IF signal;

a control unit for resetting or presetting the frequency counter unit based on the window signal generated in the window generation unit;

a latch unit operated in response to the window signal output from the window generation unit to detect a counted value of the frequency counter unit at an end point of window and maintain the detected counted value for predetermined time; and

an output unit for outputting a counted frequency value output from the latch unit as automatic fine tuning data representing a difference between the frequency of the IF signal and a nominal frequency.

5. The digital automatic fine tuning apparatus according to claim 4, wherein the frequency counter unit is a down counter for counting down from a preset value set in the control unit.

6. The digital automatic fine tuning apparatus according to claim 4, wherein the window generation unit comprises:

30

an oscillating means for generating a predetermined reference frequency; and

a counting means for dividing the reference frequency generated in the oscillating means and generating a window signal corresponding to a window period required to count a reference counted value.

7. The digital automatic fine tuning apparatus according to claim 4, further comprising an automatic fine tuning determination unit for checking the counted frequency value output from the latch unit and determining whether the received IF signal falls within an automatic fine tuning range, above the automatic fine tuning range, or below the automatic fine tuning range,

wherein the output unit outputs the automatic fine tuning data when it is determined that the received IF signal falls within an automatic fine tuning range.

8. The digital automatic fine tuning apparatus according to claim 4, further comprising a digital/analog converter unit for converting the automatic fine tuning data output from the output unit into an analog signal according to a frequency-voltage curve for automatic fine tuning.

9. The digital automatic fine tuning apparatus according

to claim 4, wherein the control unit sets a preset value so that state values of predetermined bits become "0" at an end point of the window period at the time of the frequency counting of the IF signal having a frequency equal to the
5 nominal frequency on the basis of a reference counted value X that is a counted value of the nominal frequency, resets the window generation unit and the frequency counter unit by synchronizing them with each other, checks an operation of the frequency counter unit, and presets the frequency counter unit
10 for a preset period.